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Effects of Patient-Initiated Brief Admissions on Psychiatric Care Consumption in Borderline Personality Disorder: A Register-Based Study

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ABSTRACT

Previous studies have reported that patients with borderline personality disorder (BPD) often have negative experiences in psychiatric inpatient care. To address this issue, a novel intervention known as patient-initiated brief admission (PIBA) has been developed. PIBA offers a constructive approach to crisis management in situations of heightened anxiety, as well as during instances of self-harm and suicidal ideation. The intervention allows patients to directly contact the psychiatric ward to initiate a brief admission lasting 1–3 days. This easily accessible care option during a crisis has the potential to prevent harm to the patient and reduce the need for prolonged hospital stays. The aim of the present study is to investigate the effects of PIBA on psychiatric care consumption among patients diagnosed with BPD. This retrospective register-based study includes data from both inpatient and outpatient care registries for patients diagnosed with BPD. Data were extracted from the National Board of Health and Welfare in Sweden. The study period encompasses 2013–2020, with the PIBA intervention occurring between 2016 and 2019. The sample included 107 patients in the PIBA group and 5659 matched controls. Data were analysed using a difference-in-differences (DiD) approach through ordinary least squares (OLS) regression and ordinal logistic regression. Throughout the 3-year follow-up, both groups exhibited a reduction in the number of days of utilisation of psychiatric inpatient care services. The DiD analysis indicated an additional decrease of 1.5 days at the 6-month mark for the PIBA group ($\beta = -1.436$, SE = 1.531), expanding to 3 days fewer at the 12-month follow-up ($\beta = -3.590$, SE = 3.546), although not statistically significant. For outpatient care, the PIBA group displayed an increase in the number of visits, averaging to half a visit more every 6 months ($\beta = 0.503$, SE = 0.263) compared with the controls. Statistically significant differences were observed for two out of six measurements at the 12-month ($\beta = 0.960$, SE = 0.456) and 18-month follow-up period ($\beta = 0.436$, SE = 0.219). The PIBA group had a statistically significant lower odds of experiencing extended lengths of inpatient care days after the index date than the controls (OR 0.56, 95% CI: 0.44–0.72). In conclusion, PIBA was associated with a significant reduction in the length of individual hospital stays, but not in the overall

Abbreviations: BPD, borderline personality disorder; CIs, confidence intervals; DiD, difference in differences; ESS, effective sample size; ICD-10, international classification of diseases, version 10; OLS, ordinary least squares regression; ORs, odds ratios; PIBA, patient-initiated brief admission; RCT, randomized clinical trial.

number of inpatient care days. PIBA may be linked to a shift from longer inpatient care utilisation to outpatient care utilisation. These findings suggest that PIBA may reduce the risk of prolonged hospitalisations for patients who have access to the intervention. Future research should explore the impact of PIBA on healthcare costs and cost-effectiveness, both in relation to health care for the individual and cost-effectiveness in relation to recovery and health.

1 | Introduction

The core symptoms of emotional instability are characterized by unstable interpersonal relationships, disturbed self-image and impulsive behaviour (Gunderson et al. 2018). Emotional instability is in its most pronounced form, diagnosed as borderline personality disorder (BPD) and its onset is usually during adolescence or early adulthood (American Psychiatric Association 2013). In the general population, the prevalence of BPD varies between 0.7% and 5.9% (Cailhol et al. 2017) and it is about 75% higher in women (American Psychiatric Association 2013). Persons within this diagnostic group have been found to have significantly more impairment at work, in social relationships and in leisure activities when compared to individuals with a major depressive disorder (Gunderson et al. 2011). Additionally, individuals with BPD are known to be high-level users of healthcare and social services, especially psychiatric services and emergency hospital services (Chiesa et al. 2002). Life expectancy is also known to be shortened by 9 years for men and 13 years for women in this patient group (Cailhol et al. 2017). Chronic suicidality is also a characteristic of BPD. Among these patients, 75% were reported to have attempted suicide and 10% died by suicide (Black et al. 2004). Suicidal communication, self-harm and suicide attempts are the most common motives for regular psychiatric admissions among patients with BPD (Black et al. 2004). Some patients use self-harm for regulating emotions (escaping negative state or inducing positive state) or self-punishment (Taylor et al. 2018). Psychiatrists tend to view patients with BPD as a challenging group, especially regarding assessment of suicide risk, which can lead to compulsory care (Lundahl, Helgesson, and Juth 2018). There is also a lack of evidence for compulsory care or monitoring of patients, as measures to reduce the risk of suicide or self-harm (James, Stewart, and Bowers 2012). Coercive measures and prolonged hospitalisations often raise ethical concerns even when healthcare professionals find such measures necessary (Happell and Harrow 2010).

To address the need for crisis management in situations of increased stress and anxiety for patients with BPD, a new care form called patient-initiated brief admission (PIBA) was developed (Helleman et al. 2014a). PIBA is a psychiatric nursing intervention on the basis of the theoretical concepts of patient participation (Nilsson, From, and Lindwall 2019), shared decision-making (Truglio-Londrigan and Slyer 2018) and patient autonomy (Lindberg et al. 2014). The aim of PIBA is to promote constructive coping strategies when increased anxiety and thoughts of self-harm become unmanageable (Eckerstrom et al. 2019). Patients with a PIBA agreement are given the opportunity to identify their own need for admission into psychiatric inpatient care, without first being assessed by a healthcare professional. The patients initiate PIBA by a phone call directly to a psychiatric ward to initiate admission. The structure of the intervention is stated in a specific individual plan for each patient, also referred to as the PIBA contract or agreement (Eckerstrom et al. 2019). The content of the contract must be developed together with the patient (Helleman et al. 2017) and is described in detailed in Eckerstrom et al. (2022). Briefly, the contract includes the following sections: (1) *The utility of PIBA*—when to use it, its goals and indications, when not to use PIBA and instead use a regular admission, (2) *Structure of PIBA*—its duration (i.e., 1–3 days, with a maximum utilisation of 3 times, per month), contact information to the ward, information about self-administration of medication and ward rules, and strategies when there is lack of room in the inpatient facility for initiating PIBA, (3) *Care content of PIBA*—specifying the daily activities during the inpatient stay. When the PIBA contract is established, it should be included in the patient's overall care plan and be a part of the crisis plan (Helleman et al. 2017). The process of formulating a PIBA contract and the subsequent use of PIBA in situations of crisis has the potential to increase the patients' insight into their psychiatric illness and the symptom fluctuations and further develop their coping skills (Eckerstrom et al. 2022).

The form of PIBA with focus on emotional instability and self-harm was inspired by Helleman et al. (2014a) and their research from the Netherlands. Results from the Netherlands (Helleman et al. 2014b) and from Stockholm, Sweden (Eckerstrom et al. 2020) demonstrated that the PIBA contract could be clearly formulated together with healthcare professionals, and the admission procedure was perceived as easily accessible and appreciated, compared with regular admissions. Patients explained how the daily conversations with the nurses helped them through the crises and in the management of increased psychiatric symptoms (Eckerstrom et al. 2020; Helleman et al. 2014b). These findings correspond with quantitative results showing a significant decrease in both symptoms of anxiety and depression after PIBA (Eckerstrom et al. 2022). Healthcare professionals experienced that the hierarchy, often found in regular psychiatric admissions, was replaced by partnership, and this transfer of responsibility to the patients was described as a key to the success underlying the PIBA intervention (Arnold, Wardig, and Hultsjo 2021; Eckerstrom et al. 2019). To achieve this partnership, establishing a strong collaboration between inpatient and outpatient staff is essential. This involves emphasising the importance of staff receiving information, training and an introduction to PIBA, ensuring all staff members are comfortable with the concept of the intervention (Lindgren et al. 2023). Previous research identifies occupancy issues as the biggest obstacle associated with PIBA, leading to patients being denied access when in need of admission (Eckerstrom et al. 2020; Hultsjo et al. 2023). In other clinical research sites in Sweden, patients described similar experiences and viewed PIBA as an effective intervention for gaining self-control and in the prevention of self-harm and helped the patients to function in their everyday life (Enoksson et al. 2021; Lindkvist et al. 2020). This also aligns with results from a

previous quantitative study reporting significant improvements in the mobility domain of daily life functioning and the overarching goal to increase patients' autonomy (Westling et al. 2019). Regarding patients with BPD, the effects of PIBA on psychiatric inpatient care have only been studied once before in a randomized clinical trial (RCT) (Westling et al. 2019) with a shorter follow-up. That study demonstrated a significant decrease in days with compulsory admission for the PIBA group, compared with the control group with both groups decreasing in their number of days admitted to hospital during the 12-month follow-up. Similar crisis interventions have been studied for patients with schizophrenia spectrum diagnoses (Skott et al. 2021) and anorexia nervosa (Strand et al. 2017). Patients with schizophrenia reduced their need for psychiatric inpatient care by 38% after 12-month follow-up (Skott et al. 2021). A reduction of 51% in inpatient days was also shown for patients with anorexia nervosa at 12 months after the intervention (Strand et al. 2020). In a subsequent study, Strand et al. (2021) showed that reserving hospital beds for PIBA created a 'win-win-situation' for patients and structural organisation within mental healthcare services, by reducing the need for psychiatric admissions for the study population and increased access to inpatient care for patient without a PIBA contract. To our knowledge, there is no research to date, studying the long-term effects of PIBA for patients within adult psychiatry with a diagnosis of BPD, and their care consumption of psychiatric services. Therefore, the aim of the present study was to investigate the effects of PIBA for patients with BPD on psychiatric in- and outpatient care consumption.

2 | Methods

2.1 | Design

In this longitudinal cohort study, we used data from the National Patient Register and managed by the National Board of Health and Welfare in Sweden. This register includes information on both inpatient and specialized outpatient psychiatric care.

2.2 | Data Collection

The intervention period was defined as falling between 2016 and 2019, when PIBA was offered as an intervention for patients with BPD within a specific psychiatric service in the North Stockholm region. The control group consisted of all other patients diagnosed with BPD, from psychiatric services across the same region during the same time interval, none of which offered the PIBA intervention. The National Patient Register recorded 5766 individuals aged 18 and over from the Stockholm region who had been diagnosed with BPD during the period of 2016–2019. For the control group, the index date was the first time they received the ICD-10 (International Classification of Diseases, version 10) diagnosis F60.3 for BPD, either from inpatient or outpatient care records during the intervention period. The index date for the intervention group was the day they were included in the research project had signed informed consent and given access to PIBA.

The National Patient Register contained data on all inpatient care days and specialized outpatient care visits for the 5766 patients during the period between 2013 and 2020. All these patients, including 107 individuals who were PIBA patients, were included in the analysis, constituting the final study population; see Table 1 for further details. For the longitudinal analysis, all inpatient care days and outpatient care visits from 1 January 2013 to 31 December 2020 are presented in relation to time at risk: the incidence rate per 6-month person-time prior to the index date and after the index date (hereafter referred to as the incidence rate).

2.3 | Data Analyses

Differences in sex distribution between the controls and PIBA patients were investigated using a proportion test, whereas variations in age distribution, frequencies of inpatient and outpatient care prior to diagnosis were evaluated with

TABLE 1 | Comparison of descriptive statistics and incidence rates between control group ($n = 5659$) and PIBA group ($n = 107$).

	Controls	PIBA	Test statistic	
	Mean (SE)	Mean (SE)	*t*	*p*
Age in years at index date	32.8 (0.15)	32.9 (1.20)	−0.024	0.981
Incidence rate of inpatient care days per person half-year before index date	3.2 (0.17)	11.5 (2.35)	−3.491	<0.001
Incidence rate of outpatient care visits per person half-year before index date	2.4 (0.03)	4.5 (0.35)	−5.998	<0.001
	n (%)	*n* (%)	*z*	*p*
Males	750 (13.3)	22 (20.6)	2.056	0.040
Patients with no inpatient care days during study period	2612 (46.2)	4 (3.7)	8.633	<0.001
Patients with no outpatient care visits during study period	14 (0.2)	0 (0.0)	—	—

independent *t*-tests (without assuming equal variances). For descriptive purposes (shown in Table 1), the inpatient care days and outpatient care visits before index date were summed up to a total which was then divided by time at risk (days between 1 January 2013 and index date, divided by 182.625), yielding the incidence rate. The study's main outcome involved a longitudinal analysis of incidence rate trajectories, separating the number of inpatient care days and outpatient care visits for the entire period into six periods before and after the index date, each spanning 6 months. The two groups were matched on pre-index date inpatient care days, outpatient care visits, sex and age. Seven matching methods (Nearest Neighbour, Optimal Pair, Optimal Full, Genetic, Exact, Coarsened Exact and Subclassification) were tested by examining the standard mean difference and variance ratio in matching variables between the control group and PIBA patients. The study's quasi-experimental design led to the application of the DiD method, where controls serve as a proxy for the PIBA group's potential trajectory had they not signed a PIBA contract (Antonakis et al. 2010). Cluster-robust inference was used to adjust for correlations between repeated measurements, with the subclasses from the matching procedure serving as clusters. The DiD analysis for inpatient care days was adjusted for sex, age and the incidence rate of outpatient care visits for the entire 36-month period prior to the index date. Similarly, the DiD analysis for outpatient care visits was adjusted for the same factors, except that the incidence rate for outpatient care visits was swapped for the inpatient care days incidence rate during the 36-month period before the index date. The time variable (months) was treated in two different ways, as a continuous variable, providing an average linear trend for the entire follow-up period and as a categorical variable, leading to distinct time estimates for each of the six follow-up measurements. A secondary outcome of interest involved the length of inpatient care day periods during the entire 3 years before and after the index date, to investigate if longer periods of inpatient care days were reduced after the index date compared with before and to identify differences between controls and PIBA patients. Matched controls and PIBA patients were used for this second outcome as well. However, only patients with at least one instance of inpatient care during the 6-year period were selected for this analysis. The total length of each inpatient care days period was categorized into six categories: 0 days, 1–4 days, 5–7 days, 1–2 weeks, 2–4 weeks and 1 month or longer. This second outcome was analysed both descriptively using a bar chart and with ordinal logistic regression yielding odds ratios (ORs) with 95% confidence intervals (CIs). Data management was conducted in Microsoft Excel, and all descriptive statistics and statistical modelling were performed using the open-source statistical software, R (R Core Team 2013). The following R packages were employed: Tidyverse (Wickham et al. 2019), ggplot2 (Wickham 2016), MatchIT (Ho et al. 2011), stargazer (Hlavac 2022), MASS (Venables and Ripley 2002) and emmeans (Lenth 2023).

3 | Results

Descriptive statistics as of the index date are presented in Table 1. The proportion of males was significantly higher in the PIBA group compared with the control group, whereas the age distribution between the two groups was nearly identical. The mean incidence rates for inpatient care days and outpatient visits prior to the index date were significantly lower in the control group than in the PIBA group, with figures of 3.2 vs. 11.5 for inpatient care days and 2.4 vs. 4.5 for outpatient visits, respectively.

3.1 | Matching

Despite not being a randomized study, the significant discrepancy in the number of patients without any inpatient care days between the groups necessitated the use of matching. Various matching methods were tested, demonstrating a high degree of similarity in terms of standardized mean differences and variance ratios. However, subclassification matching was chosen for further analysis, as it yielded the highest effective sample size (ESS) = 2498.75 among the controls. The quality of the subclassification matching was evaluated by examining

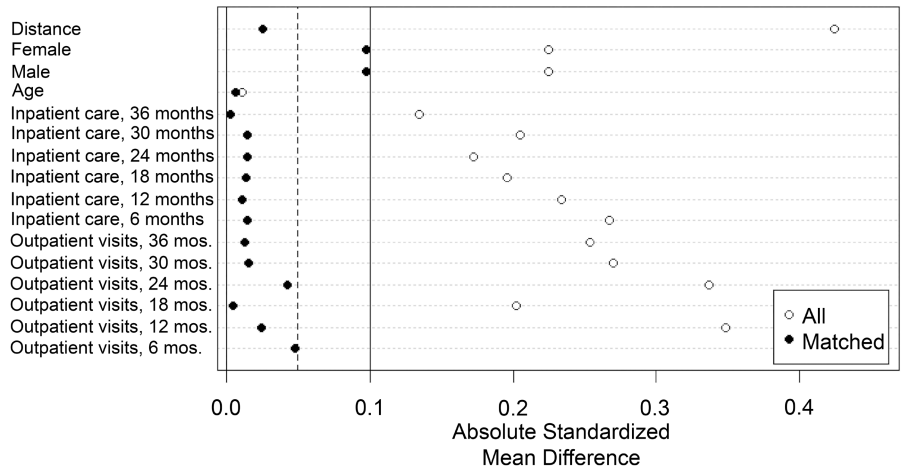

FIGURE 1 | Absolute standardized mean differences between the control group and PIBA patients among the subgroup of matched participants compared with all participants.

the covariate balance before and after matching, with the standardized mean differences between the controls and the PIBA group illustrated in Figure 1. The labels for the number of months in Figure 1 indicate the starting point for each 6-month period before index date. For the matched population, the standardized mean differences between the two groups for the covariates in the model should be lower than 0.1 to be considered a good match. As shown in Figure 1, matching based on sex was particularly challenging, explained by the disproportionately higher frequency of male patients among the PIBA group compared with the overall patient population. Conversely, matching based on age was found to be redundant, as the absolute standardized mean difference was nearly as low across all patients as for the matched group.

3.2 | Inpatient Care

The subclassification matching–adjusted trajectories of the weighted mean incidence rate of inpatient care days for the control group and PIBA patients over the study period are presented in Figure 2. Notably, there was a difference in the trajectories for inpatient care days before the index date, likely due to the variance in the number of patients without any inpatient care days during the study period between the two groups. Postindex date, a pronounced decrease in inpatient care days was observed among the PIBA group, especially between 6 and 12 months afterwards. Although the trajectories across the two groups were not entirely consistent, the PIBA group exhibited a marginally more positive trend during the follow-up period.

According to the DiD analysis presented in Table 2, there was an average reduction of about one and a half days in inpatient care per half-year period for the PIBA patients relative to the control group throughout the 3-year period after the index date. The interaction term between PIBA and time (on a continuous scale) showed a β value of −1.436, with a standard error (SE) of 1.531, and was not statistically significant. When analysing time as a categorical variable, a difference of three and a half days in the incidence rate of inpatient care days at 12-month postindex date was observed for the PIBA group ($\beta = -3.590$, SE = 3.016); however, this finding did not achieve statistical significance.

3.2.1 | Length of Inpatient Care

The findings for the secondary outcome of the study, which examines the length of inpatient care periods both before and after the index date, are presented in Figure 3. For the PIBA patients, there is a noticeable pattern of higher relative frequencies for shorter inpatient care periods after the index date, in contrast to the periods before the index date. This pattern is less evident in the control group.

The interaction term in an ordinal logistic regression showed a statistically significant lower odds of extended lengths of inpatient care days after the index date for the PIBA patients compared with the controls (OR 0.56, 95% CI: 0.44–0.72). Data on the actual frequency of inpatient care days in the postindex period revealed that over 75 percent of stays in the PIBA group were shorter than 5 days in length, compared with 62 percent among controls. Regarding longer hospitalisations, around 5 percent exceeded 2 weeks among individuals with access to PIBA, a figure that was more than double (approximately 13%) among individuals in the control group.

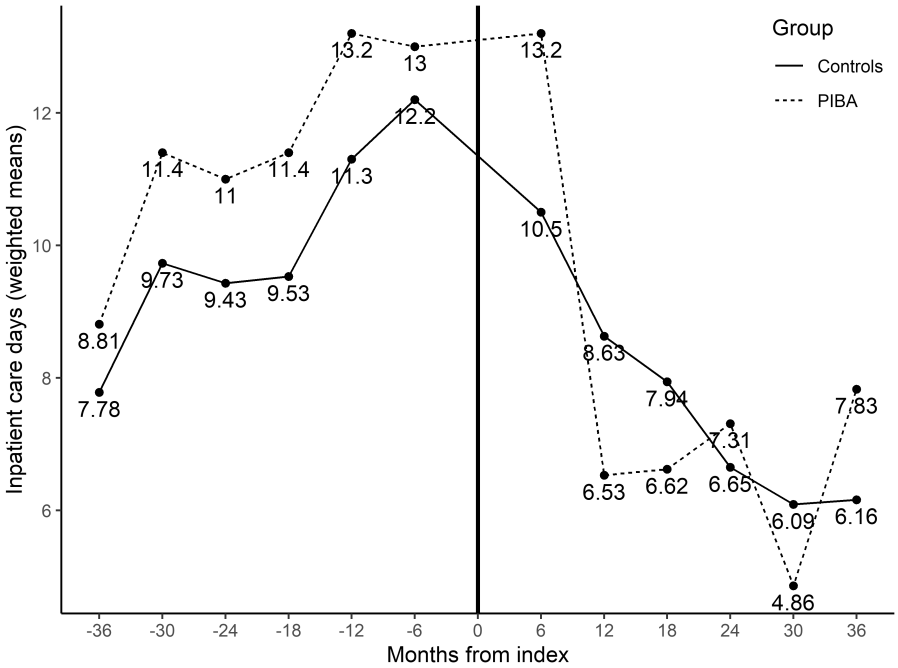

FIGURE 2 | Observed trajectories of the adjusted weighted mean incidence rates of inpatient care days over the 6-year study period for the control group and PIBA patients, matched on sex, age and pre-index outpatient care visit rates.

TABLE 2 | Model-based mean values and effect sizes for inpatient care days across the entire follow-up period and at each 6-month interval, adjusted for sex, age and pre-index incidence rates of outpatient care visits, for both PIBA patients and the control group.

Outcome	Controls			PIBA			Unstandardized effect size		
Months after index date	No. of patients	Mean	SE	No. of patients	Mean	SE	β	95% CI for β	p
6–36	—	6.34	0.544	—	4.90	1.248	−1.436	−4.437; 1.565	0.348
6	5659	7.44	0.610	107	8.64	2.860	1.201	−2.804; 3.206	0.434
12	5659	6.49	0.606	107	2.90	2.836	−3.590	−10.363; 3.184	0.299
18	5659	6.21	0.604	107	3.39	2.827	−2.814	−9.128; 3.500	0.382
24	5347	5.63	0.599	100	4.92	2.889	−0.706	−1.722; 0.309	0.173
30	4972	5.31	0.600	90	2.67	3.030	−2.644	−6.441; 1.153	0.172
36	4620	5.24	0.608	77	5.11	3.299	−0.130	−6.453; 6.193	0.968

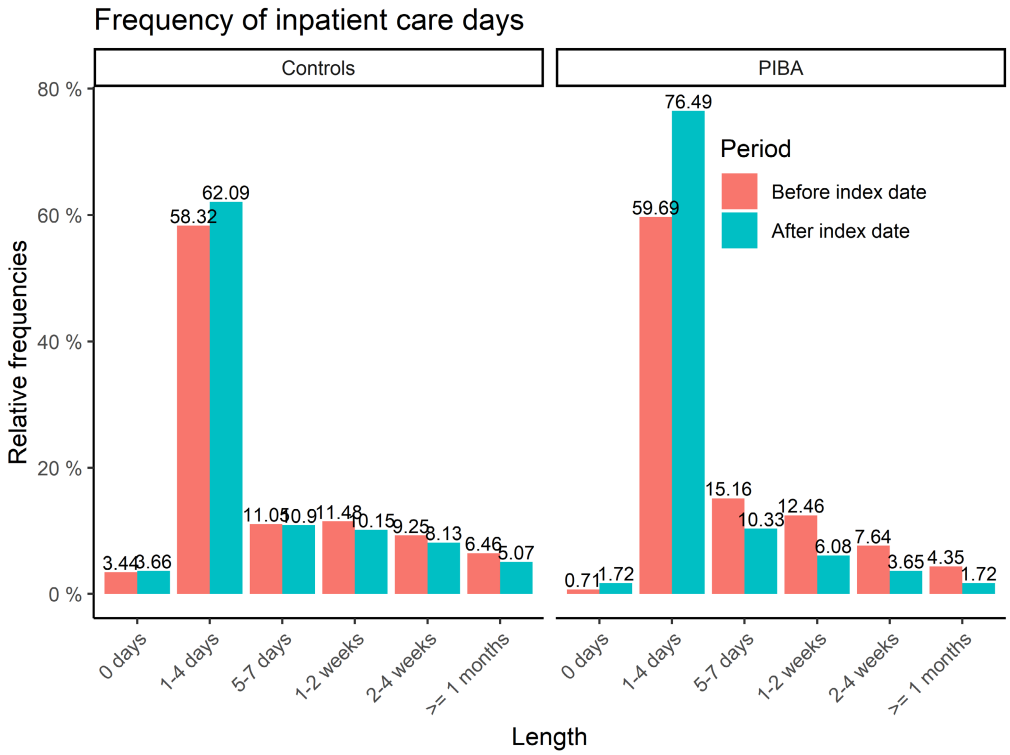

FIGURE 3 | Relative frequencies of various lengths of inpatient care days before and after the index date, differentiated between the control group and PIBA patients.

3.3 | Outpatient Care

Trajectories for outpatient care visits are illustrated in Figure 4. Prior to the index date, the trajectories of both groups were nearly identical, reflecting the effectiveness of the matching process. After the index date, the PIBA group consistently exhibited a higher incidence rate of outpatient care visits than the control group.

Statistically significant differences were observed at the 12- and 18-month intervals, as detailed in Table 3, with PIBA patients averaging about one additional visit at 12 months ($\beta = 0.960$, SE = 0.456) and exhibiting a slightly smaller difference at 18 months ($\beta = 0.436$, SE = 0.219).

4 | Discussion

This study investigated the impact of PIBA on psychiatric care consumption among patients diagnosed with BPD, using register data extracted from The National Board of Health and Welfare in Sweden. The findings reveal that although the decrease in the number of days spent in psychiatric hospitalisation for individuals who had access to PIBA compared with matched controls was not statistically significant, there was an increased incidence rate for visits to outpatient care, among the PIBA patients. This suggests a potential shift in utilisation from inpatient to outpatient care for these patients, indicating usage of healthcare and specifically psychiatric services, as a

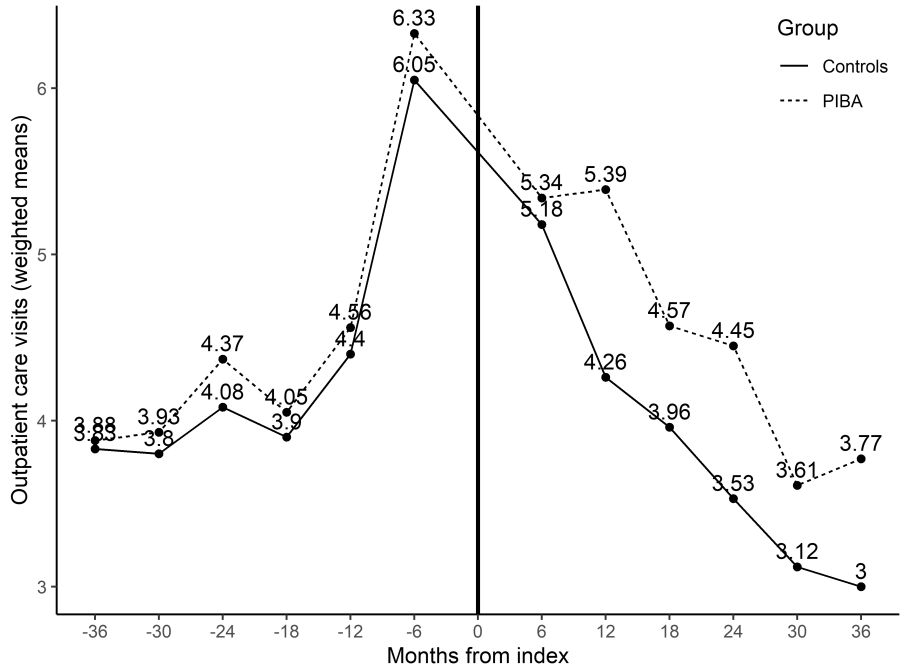

FIGURE 4 | Observed trajectories of the adjusted weighted mean incidence rate for outpatient care visits over the 6-year study period for both the control group and the PIBA patients, matched on sex, age and pre- index incidence rates of inpatient care days.

TABLE 3 | Model-based mean values and effect sizes for outpatient care visits across the entire follow-up period and at each 6-month interval, adjusted for sex, age and pre-index incidence rates of inpatient care days, for both PIBA patients and the control group.

Outcome	Controls			PIBA			Unstandardized effect size		
Months after index date	No. of patients	Mean	SE	No. of patients	Mean	SE	β	95% CI for β	p
6–36	—	3.69	0.106	—	4.19	0.244	0.503	−0.014; 1.019	0.057
6	5659	4.28	0.115	107	4.26	0.540	−0.020	−0.867; 0.826	0.963
12	5659	3.83	0.113	107	4.79	0.531	0.960	0.065; 1.854	0.035
18	5659	3.69	0.114	107	4.13	0.535	0.436	0.007; 0.865	0.046
24	5347	3.48	0.112	100	4.20	0.544	0.724	−0.223; 1.671	0.134
30	4972	3.26	0.112	77	3.49	0.566	0.240	−0.098; 0.577	0.174
36	4620	3.18	0.113	—	3.67	0.613	0.488	−0.452; 1.428	0.309

supportive tool for managing their condition which might contribute to an enhanced continuity of care and improved overall health outcomes. Additionally, the length of inpatient care stays demonstrated a significant overall reduction among individuals who had access to PIBA. This could be indicative of a more efficient treatment strategy and faster patient recovery, possibly due to the comprehensive and personalized approach of PIBA, reducing the need for extended hospital stays and potentially improved stability and well-being for these patients. Regarding the gender distribution in the current study, there were predominantly more women (79% in the PIBA group and 87% in the control group), which is consistent with previous studies of PIBA including patients with diagnosis of BPD, for example 85% women in the Swedish RCT (Westling et al. 2019) and 80% women in a longitudinal study from Austria (Koch et al. 2019).

Previous studies examining the effects of PIBA on various patient groups have yielded inconsistent results concerning the impact on real-life psychiatric hospitalisation. These studies report both increased healthcare utilisation and related costs (Paaske et al. 2021) as well as trends indicating a reduced need for inpatient treatment (Nyttingnes and Ruud 2020; Skott et al. 2021; Strand 2021). A recent study focusing on the utilisation of emergency psychiatric care among adolescents with symptoms of BPD showed significant reductions in emergency visits, emergency admissions and inpatient days after signing a treatment contract for PIBA (Johansson et al. 2023). The nonsignificant reduction in the number of inpatient care days observed in the present study may be due to a combination of factors pushing in different directions. PIBA may decrease the need for care in some patients because of its positive effects

on psychiatric symptoms (Eckerstrom et al. 2022). As suggested by previous qualitative studies (Eckerstrom et al. 2019, 2020), PIBA however may lead to increased inpatient admissions for some patients, due to improved access to care (i.e., low-threshold access to psychiatric inpatient care) and encouragement of help-seeking behaviours related to improved healthcare experiences. The results of this study indicate that care utilisation therefore is reasonable. There was no evidence of an increase in inpatient care with PIBA, suggesting that patients did not overuse this resource.

The present study found that the PIBA intervention was linked to a decrease in the length of hospital stays. It is known that extended hospitalisations, including mandatory care, can be detrimental, and even potentially harmful in terms of increased suicidal behaviour, for individuals with BPD (NICE Guidelines 2009; Paris 2019). A recent Swedish study conducted among psychiatric staff emphasized the numerous adverse effects of prolonged mandatory admissions for individuals with BPD, such as worsening symptoms and reduced patient autonomy. In light of these findings, the study advocates for brief, goal-oriented and voluntary admissions, which are believed to be more beneficial and respectful of patient needs and rights (Lundahl et al. 2023). The results of our study might suggest a reduced necessity for extended hospitalisation, potentially due to an increased sense of autonomy and learned skills enabling individuals to better regulate their emotions. This aligns with prior research highlighting the benefits of easy access to admission, for early crisis management (Eckerstrom et al. 2020; Enoksson et al. 2021; Lindkvist et al. 2020). Therefore, advocating for PIBA as a crisis management strategy may serve as an effective preventative measure to avoid extended hospitalisation. Previous studies have reported positive effects of PIBA on anxiety levels, quality of life and everyday functioning in patients (Eckerstrom et al. 2022; Enoksson et al. 2021). Collectively, these findings might suggest that PIBA could help prevent or shorten acute psychiatric admissions.

4.1 | Strengths and Limitations

The main strength of this national register-based study is its potential to evaluate the effects of the PIBA contract over an extended period, up to 3 years. A limitation of public registry data is that the number of days for PIBA could not be distinguished from those of regular psychiatric admissions or compulsory care, which would have provided valuable detail for analysis. Additionally, the study was unable to include measures of average admission length for PIBA and regular admissions, due to the constraints of the available data. Another complicating factor is the absence of information regarding the length of the agreement period for PIBA. Additionally, data on if individuals might have lost access to PIBA are not available. The limited number of individuals with access to PIBA constrained the examination of its broader effects, including potential impacts on mortality and suicide. An important methodological consideration for this study is the approach to sample size. No formal sample size calculation was conducted due to the exploratory nature of the study and reliance on available registry data. The absence of a sample size calculation, coupled with the limited number of individuals with access to PIBA, may have implications for the study's power, particularly in detecting significant effects. Given these considerations, readers should interpret the study's findings with caution, mindful of the potential limitations related to its power. This underscores the risk of underpowering, which could result in the study's inability to detect significant differences or effects that truly exist. Such a scenario enhances the risk of committing Type II errors, where null hypotheses are incorrectly accepted, potentially overlooking meaningful outcomes related to PIBA's impact on psychiatric care consumption.

4.2 | Future Directions

Future studies should consider evaluating the overall impact of PIBA through a health-economic perspective. These studies should specifically focus on understanding the direction of effects (whether they increase or decrease over time) and identifying patient subgroups that are most affected. This could include subgroups based on age, sex, disease severity, prior healthcare history, comorbidities, socio-economic factors and among others. Additionally, it would be interesting to examine how access to PIBA influences emergency department visits, compulsory care and the utilisation of other healthcare services, such as primary care. By understanding which patient populations benefit the most, healthcare services can be better directed to where they are most effective, contributing to personalized care.

5 | Conclusions

In conclusion, this study provides important insights into the effects of PIBA on psychiatric care consumption among patients diagnosed with BPD. Our findings suggest that while PIBA did not significantly reduce the number of days spent in psychiatric hospitalisation, it was associated with a significant reduction in the length of inpatient care stays, alongside a trend of increased outpatient care visits. The potential shift from inpatient to outpatient care among PIBA patients could be indicative of a more efficient use of healthcare resources, fostering better continuity of care and potentially improving the quality of life for individuals with BPD. These results warrant further research into the implementation and outcomes of PIBA, as it could potentially shape future care management for BPD patients, ultimately enhancing their psychiatric care experience and health outcomes.

6 | Relevance for Clinical Practice

The present study provides evidence for the potential effectiveness of PIBA in enhancing the care of individuals diagnosed with BPD. PIBA was correlated with a significant reduction in the length of inpatient hospital stays, offering an optimized approach to healthcare resource allocation in psychiatric settings. Furthermore, initial results suggest a potential shift from inpatient to outpatient care among patients with BPD accessing PIBA, which could lead to quicker clinical stabilisation and a more personalized treatment approach. Despite existing

limitations, these findings support further research to assess PIBA's cost-effectiveness and broader clinical impact.

Author Contributions

The study was designed by J.E., N.J.L., L.F. and A.C. who held joint meetings with The National Board of Health and Welfare in Sweden. J.E. was responsible for applying for data extraction and for obtaining the additional ethical approval. I.R. conducted the statistical analysis and had several discussions with J.E., N.J.L., L.F., A.C., R.-M.L. and R.A. regarding the analysis. The first draft of the manuscript was prepared by J.E. in cooperation with I.R. and R.-M.L. All authors read and approved the final version of the article.

Ethics Statement

All participants in the intervention group were informed and provided informed content. The research project was approved by the Regional Ethics Committee of Stockholm, Sweden (no. 2016/671-31/5 and no. 2021-05118).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data will not be made available. The ethical approval included data analysis on group level, not sharing individual data.

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